1-1-1991

Test 1642: Ford 3230 (8x2) Diesel 8-Speed

Tractor Museum
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NEBRASKA OECD TRACTOR TEST 1642—SUMMARY 080
FORD 3230 8 x 2 DIESEL
8 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP *(kW)*	Crank shaft speed rpm	Gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—600 rpm)					
32.33 *(24.11)*	2000	2.11 *(7.99)*	0.457 *(0.278)*	15.31 *(3.02)*	
Standard PTO Speed (PTO—540 RPM)					
30.99 *(23.11)*	1800	1.95 *(7.40)*	0.441 *(0.268)*	15.85 *(3.12)*	Air temperature
VARYING POWER AND FUEL CONSUMPTION					
32.33 *(24.11)*	2000	2.11 *(7.99)*	0.457 *(0.278)*	15.31 *(3.02)*	75°F *(24°C)*
28.80 *(21.47)*	2100	1.97 *(7.47)*	0.479 *(0.292)*	14.59 *(2.87)*	Relative humidity
21.78 *(16.24)*	2117	1.72 *(6.50)*	0.551 *(0.335)*	12.69 *(2.50)*	30%
14.62 *(10.90)*	2130	1.37 *(5.20)*	0.657 *(0.399)*	10.65 *(2.10)*	Barometer
7.36 *(5.49)*	2145	1.12 *(4.22)*	1.060 *(0.645)*	6.60 *(1.30)*	29.06″ Hg *(98.40 kPa)*
0.12 *(0.09)*	2167	0.82 *(3.09)*	46.056 *(28.015)*	0.15 *(0.03)*	

Maximum Torque 113 lb.-ft *(153 Nm)* at 998 rpm
Maximum Torque Rise 32.6%

DRAWBAR PERFORMANCE
FUEL CONSUMPTION CHARACTERISTICS
(Front Drive Engaged)

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Fuel Consumption Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Temp.°F *(°C)* Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—5th (1H) Gear									
26.03 *(19.41)*	1584 *(7.04)*	6.16 *(9.92)*	2001	3.78	0.578 *(0.351)*	12.11 *(2.38)*	179 *(82)*	60 *(16)*	28.72 *(97.26)*
75% of Pull at Maximum Power—5th (1H) Gear									
20.67 *(15.42)*	1187 *(5.28)*	6.53 *(10.51)*	2112	3.36	0.651 *(0.396)*	10.75 *(2.12)*	176 *(80)*	53 *(12)*	28.85 *(97.70)*
50% of Pull at Maximum Power—5th (1H) Gear									
14.02 *(10.46)*	792 *(3.52)*	6.64 *(10.69)*	2128	2.44	0.800 *(0.487)*	8.74 *(1.72)*	180 *(82)*	53 *(12)*	28.85 *(97.70)*
75% of Pull at Reduced Engine Speed—6th (2H) Gear									
20.67 *(15.42)*	1189 *(5.29)*	6.52 *(10.49)*	1689	3.36	0.575 *(0.349)*	12.17 *(2.40)*	177 *(81)*	53 *(12)*	28.85 *(97.70)*
50% of Pull at Reduced Engine Speed—6th (2H) Gear									
14.00 *(10.44)*	792 *(3.52)*	6.63 *(10.67)*	1702	2.62	0.693 *(0.421)*	10.10 *(1.99)*	176 *(80)*	53 *(12)*	28.85 *(97.70)*

Location of Test: Tractor Testing Laboratory, University of Nebraska, Lincoln, Nebraska 68583-0832, U.S.A.

Dates of Test: April 9-25, 1991

Manufacturer: FORD NEW HOLLAND, 500 Diller Avenue, New Holland, PA 17557

FUEL OIL and TIME: Fuel No. 2 Diesel **Cetane No.** 53.9 **Specific gravity converted to 60°/60°F *(15°/15°C)*** 0.8399 **Fuel weight** 6.993 lbs/gal *(0.838 kg/l)* **Oil SAE** 15W-40 **API service classification** SG/CE **To motor** 1.127 gal *(4.266 l)* **Drained from motor** 1.007 gal *(3.813 l)* **Transmission and final drive lubricant** Ford M2C 134-D fluid **Front axle lubricant** Ford M2C 134-D fluid **Total time engine was operated** 21.5 hours.

ENGINE: Make Ford Diesel **Type** three cylinder vertical **Serial No.** *B293617* **Crankshaft** lengthwise **Rated rpm** 2000 **Bore and stroke** (as specified) 4.4″ × 4.2″ *(111.8 mm × 106.7 mm)* **Compression ratio** 16.3 to 1 **Displacement** 192 cu in *(3142 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** radiator for power steering fluid **Fuel filter** one paper element and sediment bowl **Muffler** vertical **Cooling medium temperature control** one thermostat.

ENGINE OPERATING PARAMETERS: Fuel rate 14.5-16.5 lb/hr *(6.6-7.5 kg/hr)* **High idle** 2150-2200 rpm.

CHASSIS: Type front wheel assist **Serial No.** *BC76439* **Tread width** rear 56.0″ *(1423 mm)* to 79.8″ *(2026 mm)* front 55.0″ *(1396 mm)* to 73.0″ *(1855 mm)* **Wheel base** 84.1″ *(2136 mm)* **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Nominal travel speeds mph *(km/h)*** first 1.73 *(2.79)* second 2.16 *(3.48)* third 3.79 *(6.10)* fourth 5.16 *(8.30)* fifth 6.18 *(9.94)* sixth 7.71 *(12.41)* seventh 13.52 *(21.76)* eighth 18.49 *(29.75)* reverse 2.49 *(4.00)*, 8.89 *(14.30)* **Clutch** single dry disc operated by foot pedal **Brakes** wet multiple disc operated by two foot pedals which can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 1800 engine rpm **Unladen tractor mass** 5374 lb *(2438 kg)*.

DRAWBAR PERFORMANCE
MAXIMUM POWER IN SELECTED GEARS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Fuel Consumption Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Temp.°F *(°C)* Air dry bulb	Barom. inch Hg *(kPa)*
				2nd (2L) Gear					
22.78	4275	2.00	2094	14.66	0.641	10.92	178	46	28.81
(16.99)	*(19.01)*	*(3.22)*			*(0.390)*	*(2.15)*	*(81)*	*(8)*	*(97.56)*
				3rd (3L) Gear					
25.71	2637	3.66	2000	6.86	0.585	11.96	180	62	28.71
(19.17)	*(11.73)*	*(5.88)*			*(0.356)*	*(2.36)*	*(82)*	*(17)*	*(97.22)*
				4th (4L) Gear					
25.80	1903	5.08	1998	4.67	0.584	11.98	177	55	28.74
(19.24)	*(8.46)*	*(8.18)*			*(0.355)*	*(2.36)*	*(80)*	*(13)*	*(97.32)*
				5th (1H) Gear					
26.03	1584	6.16	2001	3.78	0.578	12.11	179	60	28.72
(19.41)	*(7.04)*	*(9.92)*			*(0.351)*	*(2.38)*	*(82)*	*(16)*	*(97.26)*
				6th (2H) Gear					
24.91	1208	7.74	1996	2.93	0.600	11.65	180	67	28.69
(18.58)	*(5.37)*	*(12.45)*			*(0.365)*	*(2.30)*	*(82)*	*(19)*	*(97.16)*

DRAWBAR PERFORMANCE
FUEL CONSUMPTION CHARACTERISTICS
(Front Drive Disengaged)

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Fuel Consumption Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Temp.°F *(°C)* Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—5th (1H) Gear									
26.20	1659	5.92	2000	6.46	0.575	12.15	175	58	28.72
(19.54)	*(7.38)*	*(9.53)*			*(0.350)*	*(2.39)*	*(79)*	*(14)*	*(97.26)*
75% of Pull at Maximum Power—5th (1H) Gear									
21.06	1246	6.34	2112	5.26	0.636	11.00	180	56	28.84
(15.70)	*(5.54)*	*(10.20)*			*(0.387)*	*(2.17)*	*(82)*	*(13)*	*(97.66)*
50% of Pull at Maximum Power—5th (1H) Gear									
14.41	833	6.49	2128	3.74	0.775	9.02	177	56	28.84
(10.75)	*(3.71)*	*(10.44)*			*(0.471)*	*(1.78)*	*(80)*	*(13)*	*(97.66)*
75% of Pull at Reduced Engine Speed—6th (2H) Gear									
21.03	1242	6.35	1695	5.20	0.566	12.35	175	56	28.84
(15.68)	*(5.52)*	*(10.22)*			*(0.344)*	*(2.43)*	*(79)*	*(13)*	*(97.66)*
50% of Pull at Reduced Engine Speed—6th (2H) Gear									
14.45	832	6.51	1711	3.74	0.666	10.49	174	56	28.84
(10.78)	*(3.70)*	*(10.48)*			*(0.405)*	*(2.07)*	*(79)*	*(13)*	*(97.66)*

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. For the maximum power tests, the fuel temperature at the injection pump was maintained at 135° F *(57° C)*. The performance figures on this summary were taken from a test conducted under the OECD Code II restricted standard test code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1642,** Summary 080, July 15, 1991.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
R. D. GRISSO
G. J. HOFFMAN
Board of Tractor Test Engineers

DRAWBAR PERFORMANCE
MAXIMUM POWER IN SELECTED GEARS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
				2nd (2L) Gear					
15.35	2883	2.00	2120	14.90	0.746	9.38	175	49	28.85
(11.45)	*(12.82)*	*(3.21)*			*(0.454)*	*(1.85)*	*(79)*	*(9)*	*(97.70)*
				3rd (3L) Gear					
24.52	2770	3.32	2001	14.57	0.614	11.39	180	64	28.70
(18.28)	*(12.32)*	*(5.34)*			*(0.374)*	*(2.24)*	*(82)*	*(18)*	*(97.19)*
				4th (4L) Gear					
25.71	1984	4.86	2003	8.11	0.584	11.97	178	56	28.73
(19.17)	*(8.82)*	*(7.82)*			*(0.355)*	*(2.36)*	*(81)*	*(13)*	*(97.29)*
				5th (1H) Gear					
26.20	1659	5.92	2000	6.46	0.575	12.15	175	58	28.72
(19.54)	*(7.38)*	*(9.53)*			*(0.350)*	*(2.39)*	*(79)*	*(14)*	*(97.26)*
				6th (2H) Gear					
25.64	1284	7.49	1999	5.20	0.588	11.90	179	65	28.70
(19.12)	*(5.71)*	*(12.06)*			*(0.358)*	*(2.34)*	*(82)*	*(18)*	*(97.19)*

TIRES AND WEIGHT	**Tested Without Ballast**
Rear Tires—No., size, ply & psi *(kPa)*	Two 13.6-28; 6; 14 *(95)*
Front Tires—No., size, ply & psi *(kPa)*	Two 8.3-24; 4; 16 *(110)*
Height of Drawbar	15.0 in *(380 mm)*
Static Weight with Operator—Rear	3324 lb *(1508 kg)*
—Front	2214 lb *(1004 kg)*
—Total	5538 lb *(2512 kg)*

THREE POINT HITCH PERFORMANCE (SAE Static Test)

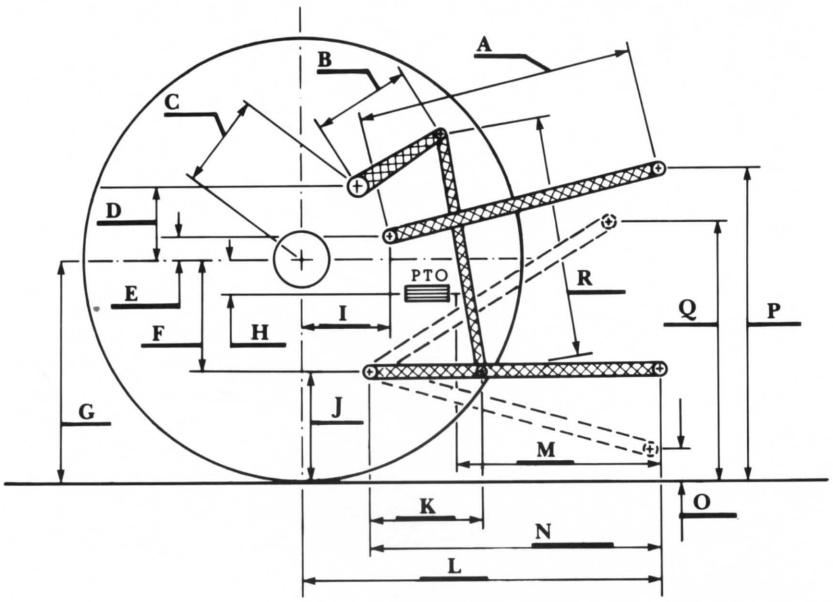
Observed Maximum Pressure psi. *(bar)*				2600 *(179)*		
Location				remote outlet		
Hydraulic oil temperature °F*(°C)*				169 *(76)*		
Location				rear axle sump		
Category				I		
Quick attach				none		
Hitch point distance to ground level in. *(mm)*	8.3 *(211)*	13.0 *(330)*	17.7 *(450)*	22.4 *(569)*	27.2 *(691)*	32.1 *(815)*
Lift force on frame lb.	3271	3589	3772	3791	3676	3473
" " " " " " *(kN)*	*(14.5)*	*(16.0)*	*(16.8)*	*(16.9)*	*(16.3)*	*(15.4)*

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: I
Quick Attach: none

Maximum Force Exerted Through Whole Range:	3056 lbs	*(13.6 kN)*
i) Opening pressure of relief valve:	NA	
Sustained pressure of the open relief valve	2610 psi	*(180 bar)*
ii) Pump delivery rate at minimum pressure:	8.0 GPM	*(30.0 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	6.1 GPM	*(23.1 l/min)*
Delivery pressure:	2400 psi	*(165 bar)*
Power:	8.5 HP	*(6.4 kW)*

HITCH DIMENSIONS AS TESTED—NO LOAD



	inch	*mm*
A	28.3	*719*
B	10.0	*254*
C	12.9	*327*
D	10.1	*257*
E	7.5	*191*
F	8.0	*203*
G	24.0	*610*
H	4.7	*120*
I	8.7	*222*
J	16.0	*407*
K	18.9	*481*
L	36.7	*931*
M	20.9	*530*
N	34.0	*864*
O	8.0	*203*
P	34.1	*867*
Q	33.1	*841*
R	29.1	*740*

Ford 3230 8 x 2 Diesel

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